ORIGINAL

0000102200

BEFORE THE ARIZONA CORPORATION COMMISSION

RECEIVED

2009 SEP -2 P 4: 19

AZ CORP COMMISSION
DOCKET CONTROL

COMMISSIONERS
KRISTIN K. MAYES - CHAIRMAN
GARY PIERCE
PAUL NEWMAN
SANDRA D. KENNEDY
BOB STUMP

IN THE MATTER OF THE APPLICATION OF UNS GAS, INC. FOR APPROVAL OF ITS PROPOSED DEMAND-SIDE MANAGEMENT ("DSM") PORTFOLIO FOR 2008-2012	DOCKET NO. G-04204A-07-0274 **UNS GAS, INC.'S REQUEST FOR APPROVAL TO REDESIGN ITS EFFICIENT HOME HEATING PROGRAM**

UNS Gas, Inc. ("UNS Gas" or "Company"), through undersigned counsel, hereby respectfully requests that the Arizona Corporation Commission ("Commission") issue an order approving its application to enhance the UNS Efficient Home Heating Program, which will be named the Residential Gas Efficiency Program (the "Program") and allow the Company to recover the costs associated with the expanded program, effective January 1, 2010.

I. INTRODUCTION

In Decision No. 70180 (February 27, 2008), the Commission approved the UNS Gas Demand-Side Management ("DSM") Portfolio for 2008 through 2012 (the "DSM Portfolio"). Included in the DSM Portfolio is the Efficient Home Heating Program that was launched to customers in the UNS Gas service territory on June 16, 2008.

In the orders approving similar programs for UNS Electric, Inc. ("UNS Electric") (Decision No. 70377, June 13, 2008, page 10, line 7) and for Tucson Electric Power Company ("TEP") (Decision No. 70376, June 13, 2008, page 10, line 11), Commission Staff ("Staff") recommended that UNS Electric and TEP ... *"review the energy savings from the program in order to determine whether a contractor qualification and incentive component, similar to that in place for Arizona Public Service ("APS") Residential HVAC DSM Program, would help to ensure cost-effective energy savings."*

Arizona Corporation Commission
DOCKETED
SEP -3 2009
DOCKETED BY

It has always been the intent of UniSource Energy Corporation ("UniSource"), the parent company of UNS Electric, UNS Gas and TEP, to offer a more inclusive program offering for residential customers, so after careful review and consideration of the quality install component, the contractor qualification component, and the duct sealing component offered by APS in their Residential HVAC DSM Program, UniSource has decided to expand the Residential HVAC DSM Programs offered through UNS Electric, UNS Gas and TEP. New program designs will include similar, more inclusive steps to those provided by APS to ensure cost-effective energy savings as recommended by Staff. This expanded program for UNS Gas is the first of three filings planned to modify program offerings of the UniSource companies.

II. INCENTIVES

To make the Program more attractive to residential natural gas customers, UNS Gas respectfully requests the Commission's approval to expand incentives that a customer can receive to include water heaters and a number of home performance services as detailed in the Program, as well as continued incentives for high efficiency gas furnaces. Since the Commission adopted UNS Gas' DSM Portfolio, UNS Gas has met with Staff on three occasions in 2009 to discuss how the DSM Portfolio should be evaluated. As a result of these meetings, Staff and UNS Gas have agreed upon a methodology based on the use of the Societal Cost Test ("SCT"). With this agreement in place, UNS Gas is confident that the expanded list of high efficiency equipment will qualify under the SCT.

III. PROMOTE EQUIPMENT AND PERFORMANCE SERVICES AS A PACKAGE

Water and space heating are important end uses in UNS Gas's high country climate and account for an estimated 90% or more of the total gas used by the residential market sector. UNS Gas's residential customers can realize significant savings on their energy bills by not only replacing old, inefficient equipment with high-efficiency equipment, but also by improving the energy performance of the building so that less energy is required to maintain desired temperatures. Home performance services, to improve thermal performance, to reduce infiltration through air sealing and to reduce duct leakage through duct sealing, will also optimize the

available savings from installing high-efficiency heating equipment. Therefore, it is important to promote these energy saving opportunities as a package and to encourage customers to improve the building shell and seal the ducts before installing high-efficiency furnaces.

IV. ORIGINAL PROGRAM VS. NEW (REDESIGNED) PROGRAM

The result of this re-design work is a new program offering. The major differences between the original program design and the new re-design include:

- New methodology of evaluating cost-effectiveness, resulting from meetings with Staff during 2009;
- Addition of high-efficiency furnace early retirement incentive;
- Addition of high-efficiency storage water heater incentives;
- Addition of air-sealing incentives (Only);
- Addition of insulation-air sealing incentives (Combined);
- Addition of duct-sealing incentives;
- Updated incremental costs;
- Changes in incentives offered to customers; and
- Increased budget for incentives and trade ally recruitment, training and program delivery, and incremental increase to DSM adjustor mechanism.

V. RECOVERY OF COSTS AND BUDGET

UNS Gas respectfully requests Commission approval to increase the Program budget through the DSM Surcharge. The incremental increase in the DSM Surcharge (adjustor mechanism) to recover the cost for redesigned Program will be $0.0015 for 2010, $.0026 for 2011, and $.0036 for 2012, as shown below.

Year	2010	2011	2012
Original Program Budget	$318,270	$327,818	$337,653
Expanded Program Budget	$496,400	$635,240	$774,262
Incremental Increase in Program Budget	$178,130	$307,422	$436,609
Incremental increase in Expanded Program Adjustor Mechanism	$0.0015	$0.0026	$0.0036

*Forecasted Retail Sales (including unbilled therms)

VI. CONCLUSION

Wherefore, for all the foregoing reasons, UNS Gas respectfully requests Commission approval of the redesign of the UNS Gas Residential Gas Efficiency Program in order to 1) enhance the Program; and 2) recover the costs associated with redesign of the Program through the DSM Surcharge. The requested effective date of the redesigned Program is January 1, 2010.

RESPECTFULLY SUBMITTED this 2d day of September 2009.

UNS Gas, Inc.

By _____

Philip J. Dion
UniSource Energy Services
One South Church Avenue, Suite 200
Tucson, Arizona 85701

And

Michael W. Patten
ROSHKA DEWULF & PATTEN, PLC.
One Arizona Center
400 East Van Buren Street, Suite 800
Phoenix, Arizona 85004

Attorneys for UNS Gas, Inc.

Original and 13 copies of the foregoing
filed this 2nd day of September 2009 with:

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copy of the foregoing hand-delivered/mailed
this 2nd day of September 2009 to:

Chairman Kristin K. Mayes
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Commissioner Gary Pierce
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Commissioner Paul Newman
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Commissioner Sandra D. Kennedy
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Commissioner Bob Stump
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Lyn Farmer, Esq.
Chief Administrative Law Judge
Hearing Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Janice M. Alward, Esq.
Chief Counsel, Legal Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Steve Olea
Director, Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

By: Mary Ippoliti

Attachment 1

Efficient Home Heating Program

Expanded and Redesigned as:

Residential Gas Efficiency Program

Residential Gas Efficiency Program

Table of Contents

UNS Gas's Residential Gas Efficiency Program

Program Concept and Description

UNS Gas, Inc.'s ("UNS Gas") Residential Gas Efficiency Program, an expansion of the Efficient Home Heating Program, promotes the installation of high-efficiency gas-fueled furnaces and water heaters in existing homes, as well as home performance services that provide insulation, air sealing and duct sealing in UNS Gas's service region. Incentives for the purchase of qualifying high-efficiency equipment or home performance services are paid directly to homeowners, and marketing and incentive paperwork processing sales incentives are paid directly to contractors at an amount of $25 per unit rebated. A list of approved UNS Gas contractors will be developed who are eligible to provide qualifying equipment and home performance services to UNS Gas customers.

UNS Gas will provide consumer education on the benefits of qualifying equipment and home performance services, and will promote the program through UNS Gas promotional events, participating contractors, the UNS Gas website, and print advertising.

Program Objectives

The objective of the program is to promote the purchase of Energy Star qualified high-efficiency furnaces and water heaters, to promote measures that improve thermal performance, reduce unwanted air infiltration, and measures that reduce duct leakage, thereby reducing the energy demand placed on space heating equipment.

Program Rationale

Water and space heating are important end uses in UNS Gas's high country climate and account for an estimated 90% or more of the total gas used by the residential market sector. UNS Gas's residential customers can realize significant savings on their energy bills by not only replacing old, inefficient equipment with high-efficiency equipment, but also by improving the energy performance of the building so that less energy is required to maintain desired temperatures. Home performance services, to improve thermal performance, to reduce infiltration through air sealing and to reduce duct leakage through duct sealing, will also optimize the available savings from installing high-efficiency heating equipment. Therefore, it is important to promote these energy saving opportunities as a package, and to encourage customers to improve the building shell and seal the ducts before installing high-efficiency furnaces.

Because Arizona Public Service ("APS") serves electric services in much of the UNS Gas service territory, and APS also offers incentives to customers for home performance services, such as duct-sealing, it is possible for customers of UNS Gas to have air sealing and duct sealing completed through the APS program offering. However, APS does not offer incentives to promote high-efficiency gas equipment. Therefore, UNS Gas chooses not to make duct-sealing a requirement for customers to receive equipment incentives offered through UNS Gas. It is the intent of UNS Gas to promote comprehensive repairs to each home to maximize savings for those customers who have not already taken steps to improve the building shell and seal ducts.

Target Market

The program is targeted at UNS Gas customers who are in the market to replace their existing space or water heating equipment and/or increase the thermal efficiency of their home through insulation, air sealing and duct sealing.

Program Eligibility

The program is available to all UNS Gas residential customers. All brands of equipment that meet the minimum performance standards are eligible for the program. Homeowners are eligible to receive incentives for purchasing qualifying high-efficiency equipment, insulation and for reducing infiltration through air sealing measures to the building shell and reducing duct leakage through duct sealing measures.

If a comparable program is offered in the UNS Gas service territory by another utility, customers must choose which utility program they will participate. Customers will not be allowed to receive rebates from both the UNS Gas Residential Gas Efficiency Program and another utility program for the same energy efficiency measure.

Current Baseline Conditions

The average lifetime of residential heating equipment is approximately 18 years, and it is estimated that most of the equipment that will be installed under this program will replace standard 80% efficient furnaces. The average lifetime of residential water heating equipment is approximately 13 years, and it is estimated the most of the equipment that will be installed under this program will replace 0.59 EF water heaters. This program will also include selected thermal shell insulation, air sealing and duct sealing measures intended to improve thermal performance, reduce air infiltration by approximately 50% and reduce duct leakage by approximately 60%.

Products and Services

The Residential Gas Efficiency Program is a customer incentive program design that provides rebates for the installation of energy efficiency measures in existing residential facilities. More specifically, the products and services provided by the program include:

- Incentives to homeowners for the installation of qualifying high-efficiency furnaces, for either end of life replacement/new construction applications or early retirement of working units. Program requirements for the early retirement incentive include the following:
  - The eligibility criteria will include a 72 hour advance notice requirement, which will allow UNS Gas the option and discretion to perform spot checks to ensure systems being reported as eligible early retirement jobs actually conform to program requirements;

- In the opinion of the contractor, but subject to review and approval by UNS Gas, the existing furnace must be in satisfactory working condition or in need of less than $500 in repairs;
- Existing furnace must be less than or equal to 15 years old and must be non-condensing; and
- If system is greater than16 years or older, it is eligible for a replacement incentive only;

- Incentives to homeowners for the installation of qualified energy-efficient storage water heaters;
- Incentives to homeowners for air sealing. Program requirements for the air sealing incentive include the following:
  - Blower door guided whole house air sealing is typically one of the most cost effective measures. To ensure estimated savings are being achieved, a Blower Door Test by a trained and certified contractor[1] shall be required with reported air leakage numbers in CFM @ 50 Pa before air sealing measures are implemented, and CFM @ 50 Pa after air sealing has been completed. A summary showing net air leakage reduction and methods used to achieve the reduction will be required to receive an incentive;
- Incentives to homeowners for duct sealing. Program requirements for the duct sealing incentive include the following:
  - If the system is losing more than 8 % of the conditioned air, duct sealing and repair should be implemented. Duct leakage must be tested by a trained and certified contractor* before and after the repair with an approved testing method. Approved methods include:
    - Duct Blaster;
    - Blower Door Subtraction Method;
    - Flow Hood Method; and
    - Pressure Pan Method; and
  - Total duct leakage to outside must be reduced by 50% or greater in order to qualify for the incentive;
- Incentives to homeowners for attic insulation. Program requirements for attic insulation incentive include the following:
  - Base case attic insulation levels must be less than R-19. Insulation improvements must increase the total attic insulation from it's existing value up to at least R-30; and
  - A prerequisite for the insulation rebate is a Blower Door Test by a trained and certified contractor. If the Blower Door Test shows building air leakage is >0 .35 ACH, then air-sealing must be completed prior to the installation of new insulation. Customer can receive up to $500 for a combined insulation and air-sealing rebate. Incentives and qualifying criteria are summarized in Table 1, below;

[1] All BPI duct sealing and air sealing contractors must be able to perform a combustion appliance safety test for all dwellings with a combustion appliance (i.e., an appliance that employs direct combustion of it's fuel source) and notify customer of any deficiency(ies) that are identified. All Combustion Appliance Safety Test deficiency(ies) (e.g., draft deficiencies, high CO levels) must be corrected before duct system repairs or air leakage measures are performed.

Residential Gas Efficiency Program

Table 1. Incentives Schedule

Measure	Qualifying Criteria*	Incentive
High Efficiency Furnace (Replacement/New)	>=90% AFUE	$200
High Efficiency Furnace (Replacement/ New)	>=92% AFUE	$300
High Efficiency Furnace (Replacement/ New)	>=94% AFUE	$375
High Efficiency Furnace (Early Retirement)	>=90% AFUE	$650
High Efficiency Furnace (Early Retirement)	>=92% AFUE	$750
High Efficiency Furnace (Early Retirement)	>=94% AFUE	$850
Energy Efficient Storage Water Heater	Minimum EF of 0.62	$50
Air Sealing (Only)	Air sealing in compliance with program requirements up to a maximum of 0.35 ACH. Contractor performs air sealing, testing in/out and reporting performance results to UNS Gas	50% of Installed Cost up to $250
Duct Sealing	Duct sealing in compliance with program requirements. Contractor repairs and seals ducts, testing in/out and reporting performance results to UNS Gas	50% of Installed Cost up to $250
Insulation & Air-Sealing (Combined)	Eligibility is only for attic insulation, where existing condition is < R-19, increasing insulation to >=R-38. To qualify for the insulation rebate, a Blower Door Test is required. If building leakage is >.35 ACH, air-sealing must also be completed and the customer can receive the air-sealing rebate as well, for a total of $500	50% of installed cost up to $500

* Consortium for Energy Efficiency ("CEE") is an independent rating agency.

- Marketing costs, which may include compensation up to $25 per rebated product or service paid to contractors to encourage program promotion and offset costs associated with detailed reporting required on each project; and
- Education and promotional efforts designed to inform customers about the benefits of improved thermal efficiency, air sealing, duct sealing and high-efficiency space and water heating, including educational brochures, program promotional material, and UNS Gas website content.

Program Delivery Strategy and Administration

The strategy for program delivery and administration is as follows:

- The program will be managed in-house by UNS Gas staff;
- UNS Gas will provide overall program management, marketing, planning and coordination of customer and contractor participation.
- UNS Gas may use a third party implementation contractor for assistance with rebate processing, data tracking, technical support and for trade ally management. The actual direct delivery of efficiency services to residential customers will be by participating trade allies. UNS Gas will work closely with the implementation contractor to recruit, train and manage trade allies to ensure optimum effectiveness in program delivery.
- Key partnering relationships will include:
  - HVAC, insulation, and air sealing training professionals;
  - Community interest groups;
  - HVAC, insulation, and air sealing contractors trained in program procedures; and
  - The Arizona Energy Office and Coconino County Community College, or other industry experts to provide training, education and awareness.
- Building Performance Institute ("BPI") Certification:
  - UNS Gas will work to standardize on a requirement to utilize BPI accredited contractors for HVAC and building shell work. As such, consumer marketing and contractor training in 2010 and beyond will emphasize the importance of BPI certification;
  - UNS Gas will not require BPI certification for the initial program redesign launch. However, this requirement will be added to the program requirements no later than June 2011;
  - To prepare for the future, UNS Gas will begin an extensive campaign to recruit contractors interested in receiving BPI certification. UNSG will capitalize on existing resources and specialty associations to spread the word;
  - UNS Gas will organize and deliver BPI certification classes for contractors; and
  - UNS Gas will help to subsidize for BPI certifications. Reimbursement will be paid after the contractor receives BPI certification and completes a certain number of jobs as specified by the program.

Program Marketing and Communication Strategy

The marketing and communications strategy will include the following components:

- UNS Gas will provide program marketing and customer awareness-building through a range of strategies including:
  - Promotions on the UNS Gas website about the benefits of purchasing high-efficiency equipment;
  - Promotion through community interest groups;
  - Advertising in major newspapers and other selected print media in the UNS Gas service region to raise awareness of the availability of the program;
  - Providing information through UNS Gas's customer care center;
  - Developing marketing pieces including brochures and other collateral pieces to promote the benefits of qualifying equipment, air sealing and duct sealing;
  - Assistance with responding to customer inquiries about the program and how to purchase qualifying equipment; and
  - Training and seminars for participating trade allies; and
- The advertising campaign will communicate that high-efficiency systems and home performance services will help reduce customer energy bills, provide equal or better comfort conditions, and are beneficial for the environment.

Program Implementation Schedule

Pending program approval by the Arizona Corporation Commission (the "Commission"), UNS Gas will launch the new program effective January 1, 2010. As such, UNS Gas requests program review as quickly as possible to allow for implementation planning during the Fall 2009.

Measurement, Evaluation and Research Plan

UNS Gas will adopt a strategy that calls for integrated data collection, which is designed to provide a quality data resource for program tracking, management and evaluation. This approach will entail the following primary activities:

- **Database management** - As part of program operation, UNS Gas will collect the necessary data elements to populate the tracking database and provide periodic reporting;
- **Integrated implementation data collection** – UNS Gas will establish systems to collect the data needed to support effective program management and evaluation through the implementation and customer application processes. The database tracking system will be integrated with implementation data collection processes;
- **Field verification** – UNS Gas will conduct field verification of the installation of a sample of measures throughout the implementation of the program; and
- **Tracking of savings using deemed savings values** – UNS Gas will develop deemed savings values for each measure and technology promoted by the program, periodically review and revise the savings values to be consistent with program participation, and accurately estimated the savings being achieved by the program.

This approach will provide UNS Gas with ongoing feedback on program progress and enable program management to adjust or correct the program so as to be more effective, provide a higher level of service, and be more cost beneficial. Integrated data collection will also provide a high quality data resource for evaluation activities.

Program Budget

Due to the expanded list of equipment and home performance services, the Residential Gas Efficiency Program budget is expected to increase, as detailed in Tables 2 and 3, below. A comparison to the original program design budget and the incremental increase in budget and necessary DSM adjustor to provide this expanded program offering is included in Table 3.

Table 2. Residential Gas Efficiency Program Budget (2010-2012)

	Efficiency Level	Incentive / Measure	Units Rebated			Budget		
			2010	2011	2012	2010	2011	2012
Incentives								
High Efficiency Furnace (New/Replacement)	>=90 AFUE	$200	10	20	30	$2,000	$4,000	$6,000
High Efficiency Furnace (New/Replacement)	>=92 AFUE	$300	200	250	300	$60,000	$75,000	$90,000
High Efficiency Furnace (New/Replacement)	>=94 AFUE	$375	50	100	150	$18,750	$37,500	$56,250
High Efficiency Furnace (Early Retirement)	>=90 AFUE	$650	10	20	30	$6,500	$13,000	$19,500
High Efficiency Furnace (Early Retirement)	>=92 AFUE	$750	20	40	60	$15,000	$30,000	$45,000
High Efficiency Furnace (Early Retirement)	>=94 AFUE	$850	10	20	30	$8,500	$17,000	$25,500
High Efficiency Gas Water Heater	>=0.62 EF	$50	200	400	600	$10,000	$20,000	$30,000
Air Sealing	From 0.75 ACH to 0.35 ACH	$250	100	150	200	$25,000	$37,500	$50,000
Duct Sealing	262 CFM 25 to 105 CFM 25	$250	100	150	200	$25,000	$37,500	$50,000
Attic Insulation	< R-19 to >=R-30	$250	100	150	200	$25,000	$37,500	$50,000
Subtotal Financial Incentives						**$195,750**	**$309,000**	**$422,250**
Program Delivery								
UNSG Program Delivery						$110,000	$113,300	$116,699
Inspections, Rebate Processing, Data Tracking						$63,000	$64,890	$66,837
Trade Ally Training						$40,000	$30,000	$20,000
Subtotal Program Delivery						**$213,000**	**$208,190**	**$203,536**
Program Marketing								
Program Marketing						$32,700	$41,375	$50,063
Trade Ally Marketing						$17,500	$28,750	$40,000
Subtotal Program Marketing						**$50,200**	**$70,125**	**$90,063**
Utility Program Administration								
UNSG Program Administration						$18,358	$23,493	$28,634
Subtotal Utility Program Administration						**$18,358**	**$23,493**	**$28,634**
Evaluation								
Measurement, Evaluation and Research						$19,092	$24,432	$29,779
Subtotal Evaluation						**$19,092**	**$24,432**	**$29,779**
Total Non-Incentive						**$300,650**	**$326,240**	**$352,012**
Total Incentive						**$195,750**	**$309,000**	**$422,250**
TOTAL						**$496,400**	**$635,240**	**$774,262**
Incentives as % of Total Budget						**39%**	**49%**	**55%**

Table 3. 2010 – 2012 Comparison of Program Budgets and DSM Adjustor

Year	2010	2011	2012
Original Program Budget	$318,270	$327,818	$337,653
Expanded Program Budget	$496,400	$635,240	$774,262
Incremental Increase in Program Budget	$178,130	$307,422	$436,609
Incremental increase in Expanded Program Adjustor Mechanism	$0.0015	$0.0026	$0.0036

*Forecasted Retail Sales (including unbilled therms) TME May 31, 2010 119,932,651

Estimated Energy Savings and Environmental Benefits

Annual energy savings goals for the expanded program are presented in Table 4, below. Appendix 1 (attached) provides further information about estimated energy savings for each measure category, including the measure and program level benefit/cost analysis.

Table 4. Projected Energy Savings for Expanded Program

Energy Savings	2010	2011	2012	Total
Annual (Therms)	88,304	134,659	181,013	403,977
Lifetime (Therms)	1,639,480	2,491,860	3,344,240	7,475,580

After the 2010 ramp up of the expanded program, energy savings is expected to significantly surpass energy savings expectations from the original program design shown in Table 5, below.

Table 5, Annual Energy Savings Expectations from Original Program Design

Year	2010	2011	2012
Energy Savings (Therms)	100,432	103,444	106,548

As a result of the energy savings shown in Table 5, it is estimated that the program will produce environmental benefits through avoided CO2 emissions shown in Table 6, below.

Table 6. Projected Environmental Benefits, 2010 – 2012

CO2 Reductions	2010	2011	2012	Total
Annual (Tons)	521	795	1,068	2,383
Lifetime (Tons)	9,673	14,702	19,731	44,106

Program Cost Effectiveness

The cost effectiveness of furnace and water heater replacements and home performance services were assessed using the Total Resource Cost ("TRC") test and the Societal Cost test ("SCT"). A summary of the measure level cost-effectiveness is included below in Table 7, below. The detailed measure analysis worksheets showing energy savings, cost and cost-effectiveness calculations for each individual measure are included in Appendix 1.

The cost effectiveness analysis requires estimation of:

- Net energy savings attributable to the program;
- Net incremental cost to the customer of purchasing qualifying equipment or services;
- UNS Gas's program administration costs; and
- The present value of program benefits including UNS Gas avoided costs over the life of the measures.

For the SCT, UNS Gas included an estimated externality cost associated with avoided carbon emissions starting in 2012, with a low of $14/ton (SCT Low), medium at $25/ton (SCT Med), and high (SCT High) at $43/ton, and all carbon values escalating over time.

Although Staff advised UNS Gas to go ahead and include a valuation of CO2 in the benefit/cost calculations, Staff and UNS Gas also understand it is up to the Commissioners to accept or deny this value. Until the Commission provides a formal acceptance regarding inclusion of CO2 in the calculation of the SCT, UNS Gas will continue to provide results of the TRC test for Commission review.

Table 7. Measure Level Benefit-Cost Analysis Results

	TRC	SCT Low	SCT Med	SC High
HE Furnace 90 AFUE – NEW/ROB	3.6	4.1	4.3	4.6
HE Furnace 92 AFUE – NEW/ROB	2.8	3.2	3.4	3.6
HE Furnace 94 AFUE – NEW/ROB	2.4	2.7	2.9	3.1
HE Furnace 90 AFUE – Early Retirement	1.2	1.4	1.4	1.5
HE Furnace 92 AFUE – Early Retirement	1.2	1.4	1.4	1.5
HE Furnace 94 AFUE – Early Retirement	1.2	1.3	1.4	1.5
EE Storage Water Heater <= 75 kBtuh	1.0	1.1	1.2	1.3
Air Sealing	1.7	1.9	2.1	2.2
Duct Sealing	1.3	1.6	1.7	1.8
Air Sealing + Attic Insulation	0.9	1.0	1.1	1.1

*Note: SCT results and overall program level benefit/cost results were calculated in Analytica software program, file named "UNSG Benefit Cost Model 15.ANA".

Table 8, below, provides a summary of the benefit/cost analysis results at the program level according to the TRC and the SCT using the methodology and avoided cost information approved by Staff .

Table 8. Program Benefit-Cost Analysis Results

Benefit Cost Tests	
TRC	1.4
SCT Low	1.7
SCT Med	1.8
SCT High	1.9

In addition to estimating the savings from each measure, this analysis relies on a range of other assumptions and financial data provided in Table 9, below.

Table 9. Other Financial Assumptions

Conservation Life (yrs):	20
Program Life (yrs):	5
Energy AC ($/Therm):	0.91532
Incentives as Percent of Total Budget over Three Years (2010-2012)	57.0%
TRC Discount Rate	7.00%
Social Discount Rate	7.00%
Weighted Averages Net-to-Gross Ratio:	100%

Appendix 1 – Measure Level Energy Savings and Benefit/Cost Analysis

UNSG C&I PROGRAM

HIGH-EFFICIENCY GAS FURNACE

PROGRAM DATA	
Measure Life (yrs):	20
Program Life (yrs):	5
Levelized $/Therms	$0.84210
Ratio of Non-inc to Incentive Costs	40.0%
IRP Discount Rate:	7.00%
Social Discount Rate	7.00%
NTG Ratio:	100%

OPERATING DATA	
Htg. Season Hrs.:	2,460
Htg. Season Load Factor:	0.80
Peak Day Load Factor:	0.80

RATE DATA	
$/Therm	$0.8187

OTHER FACTORS	
Application	ROB
Cost Basis:	Incremental equipment

Weighting Factors	
AFUE =90	60%
AFUE =92	30%
AFUE =94	10%

DEMAND/ENERGY SAVINGS							INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS					WGT.	% Incent	TRC
Measure Type	Size	Base Capacity (Btuh)	Base Eff.	High Eff.	Peak Day Savgs. Per Unit (Therms)	Annual Savgs. Per Unit (Therms)	IRP PV Benefit ($/Unit)	Social PV Benefit ($/Unit)	Recommended Incentive ($/Unit)	Recommended Incentive % PV	PV Program Cost ($/Unit)	NPV ($/Unit)	Incr. Cost ($/Unit)	Tax Credits and Other Incentives ($/Unit)	Cost Savings ($/Unit)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
HI-E FURNACE	<300,000 Btuh	80000	0.80	0.90	2.13	219	$1,951	$1,951	$200	10%	$410	$1,541	$330	$0	$179	1.8	0.7	60%	61%	4.76
HI-E FURNACE	<300,000 Btuh	80000	0.80	0.92	2.50	257	$2,290	$2,290	$300	13%	$541	$1,750	$421	$0	$210	2.0	0.6	30%	71%	4.24
HI-E FURNACE	<300,000 Btuh	80000	0.80	0.94	2.86	293	$2,615	$2,615	$375	14%	$662	$1,953	$512	$0	$240	2.1	0.6	10%	73%	3.95
Weighted Average						238	$2,119	$2,119	$248	12%	$474	$1,645	$375	$0	$194	1.9	0.7	100%	66%	4.47

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life based on DEER 2008 Data
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See worksheet 'Cost Assumptions' for information of cost data.
(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009
(6) Ratio of Non-inc to Incentive Costs discounted 20% for 2008/09 program measures

Residential Gas Efficiency Program

EXISTING RESIDENTIAL HVAC PROGRAM- FURNACE EARLY RETIREMENT

206 – Hi-Efficiency Gas Furnace Early Retirement

REBATE CREDIT DATA	Ducts	Equip	Input estimated years of remaining life on a unit here
Measure Life (yrs)	10	18	8
Program Life (yrs)		5	
IRP Levelized AC ($/therm)	$0.0574	$0.0186	$0.6666
LO Societal Levelized AC ($/therm)	$0.7683	$0.9282	$0.7251
MED Societal Levelized AC ($/therm)	$0.0114	$0.9906	$0.7654
HI Societal Levelized AC ($/therm)	$0.8998	$1.0376	$0.8176
Non-Incentive Costs		$0	
Discount Rate		7.00%	
NTG Ratio		100%	

Choose which measures to evaluate in J5 and J7

Duct Test and Repair Req'd?	No
Equipment	Yes

Duct Repair Savings	Heating	Cooling
Energy Savings	8%	0%
Demand Savings	0%	0%

Duct Leakage Assumptions

	Req'd. Need	No Repair Needed
Supply	6%	5.0%
Return	7%	5.0%

Notes:
To evaluate DT&R alone, choose Yes for DT&R and No for Equipment and enter estimated existing duct leakage in the Repair Needed cells
To evaluate Early Retirement alone, choose No for DT&R and Yes for Equipment and enter the estimated existing duct leakage in the No Repair Needed cells.
To evaluate Both, choose Yes for DT&R and Yes for Equipment and enter the estimated duct leakage in the Repair Needed cells

RATE DATA	
Rate Class	Res Avg
$/therm	$1.8152

WEIGHTING BY AGE	
Replaced on Ea	0%
5-10 yrs old	16.7%
10-15 yrs old	33.3%
15+ yrs old	50.0%

City: Prescott (Use dropdown in cell Z14 to choose city for analysis.

Measure Type	Unit Size (kBtuh)	Installed Eff (AFUE)	Remaining Useful Life (Years)	Retrofit Base Eff (AFUE)	Replacement Base Eff (AFUE)	Pre-DT&R Annual Energy (Therms)	DT&R Savings (Therms)	Post-DT&R Annual Energy (Therms)	EE Annual Energy (Therms)	Retrofit Annual Savings (Therms)	Percent of Annual Usage (Retrofit)	Replacement Annual Savings (Therms)	Percent of Annual Energy Savings (Replacement)	Average Total Savings (Therms)	Ducts IRP PV Benefit ($)	Retrofit IRP PV Benefit ($)	Replacement IRP PV Benefit ($)	Total IRP PV Benefit ($)	Ducts Lo PV Benefit ($)	Retrofit Lo PV Benefit ($)	Replacement Lo PV Benefit ($)	Total Lo PV Benefit ($)	Ducts Med PV Benefit ($)	Retrofit Med PV Benefit ($)	Replacement Med PV Benefit ($)	Total Med PV Benefit ($)	Ducts Hi PV Benefit ($)	Retrofit Hi PV Benefit ($)	Replacement Hi PV Benefit ($)	Total Hi PV Benefit ($)	Recommended Incentive ($)	% PV	IRP PV Cost ($)	IRP NPV ($)	Incr Cost ($)	Cost Savings ($)	Payback w/o Incr (yrs)	Payback w/ Incr (yrs)	Weighting Factor	% Incent	IRP	TRC	Societal Lo	Societal Med	Societal Hi
Hi-Eff Furnace	80	96%	8	78%	80%	1386	0	1386	1740	135	15%	156	10%	145	$0	$737	$682	$1,419	$0	$856	$804	$1,660	$0	$900	$853	$1,753	$0	$964	$895	$1,859	650	44%	$829	$598	$235	$195	6.45	3.85	60%	74%	1.7	1.9	2.0	2.1
Hi-Eff Furnace	80	92%	8	78%	80%	1386	0	1386	1230	217	17%	118	14%	192	$0	$995	$801	$1,896	$0	$977	$944	$1,921	$0	$1,027	$1,001	$2,029	$0	$1,103	$1,051	$2,151	750	44%	$1,026	$678	$1,020	$157	6.50	1.72	30%	74%	1.7	1.9	2.0	2.1
Hi-Eff Furnace	80	94%	8	78%	80%	1386	0	1386	1206	235	20%	201	17%	217	$0	$1,004	$814	$1,819	$0	$1,093	$1,078	$2,170	$0	$1,142	$1,143	$2,282	$0	$1,231	$1,200	$2,431	850	44%	$1,172	$747	$1,172	$177	6.61	1.61	10%	73%	1.6	1.9	2.0	2.1
Weighted Average	80	91%	8	78%	80%	1386	0	1386	1247	198	16%	163	13%	178	$0	$842	$741	$1,583	$0	$916	$874	$1,789	$0	$963	$927	$1,891	$0	$1,032	$972	$2,004	700	44%	$951	$632	$951	$146	6.50	1.71	100%	74%	1.7	1.9	2.0	2.1
															OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK		OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Notes:
(1) Retrofit is defined as the period of time from installation of the new system through the remaining life of the existing system.
(2) Replacement is defined as the period of time from the end of the remaining life of the system through the end of the useful life of the new system.
(3) Retrofit savings are only for the time of installation through the remaining life of the existing system.
(4) Replacement savings are only for the period of time from the end of the remaining life of the existing system through the end of the useful life of the new system.

File Name: UNG2_RHVAC_206_EPFurnace
Status: DRAFT

Residential Gas Efficiency Program

UNSG C&I and RESIDENTIAL PROGRAMS HIGH EFFICIENCY SERVICE HOT WATER HEATER ≤ 75,000 BTUh

PROGRAM DATA	
Measure Life (yrs):	13
Program Life (yrs):	5
Levelized $/Therms	$ 0.74855
Ratio of Non-inc to Incentive Costs	40.0%
IRP Discount Rate:	7.00%
Social Discount Rate	7.00%
NTG Ratio:	100%

OPERATING DATA Commercial
Based on light/moderate users

OPERATING DATA Residential
Energy consumption estimated using the DOE test procedure. Based on the following formula: (41,045 BTU/EF x 365)/100,000

OTHER FACTORS	
Application	ROB
Cost Basis:	Incremental equipment

RATE DATA	
$/Therm	$ 0.8541

Weighting Factors	units
Commercial	25%
Residential	75%

DEMAND/ENERGY SAVINGS				INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS					WGT.	% Incent	TRC
Measure Type	Base EF	Measure EF	Annual Savings (Therms)	IRP PV Benefit ($/Unit)	Social PV Benefit ($/Unit)	Recommended Incentive ($/Unit)	Recommended Incentive % PV	PV Program Cost ($/Unit)	NPV ($/Unit)	Incr. Cost ($/Unit)	Tax Credits and Other Incentives ($/Unit)	Cost Savings ($/Unit)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
Combined Commercial-Residential Water Heater Program	0.594	0.620	14.3	$89	$89	$50	56%	$94	-$5	$74	$0	$12	6.1	2.0	100%	68%	0.95

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life based on DEER 2008 data
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See worksheet 'Cost Assumptions' for information of cost data.
(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009
(6) Ratio of Non-inc to Incentive Costs discounted 20% for 2008/09 program measures

Residential Gas Efficiency Program

UNSG RES PROGRAM

REDUCED INFILTRATION

PROGRAM DATA	
Measure Life (yrs):	20
Program Life (yrs):	5
Levelized $/Therms	$0.84
Ratio of Non-inc to Incentive Costs	50.0%
IRP Discount Rate:	7.00%
Social Discount Rate	7.00%
NTG Ratio:	100%

OPERATING DATA
From 0.65 ACH to 0.35 ACH

RATE DATA	
$/Therm	$0.8819

OTHER FACTORS	
Application	RET
Cost Basis:	Installed Cost

Weighting Factors	
Flagstaff	40%
Kingman	50%
Prescott	10%

	DEMAND/ENERGY SAVINGS					INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS					WGT.	% Incent	TRC
Measure Type	Location	Basis	Base Usage (Therms/home)	Measure (Therms/home)	Annual Savgs. Per Home (Therms)	IRP PV Benefit ($/Unit)	Social PV Benefit ($/Unit)	Recommended Incentive ($/Unit)	Recommended Incentive % PV	PV Program Cost ($/Unit)	NPV ($/Unit)	Incr. Cost ($/Unit)	Tax Credits and Other Incentives ($/Unit)	Cost Savings ($/Unit)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
Reduced Infiltration	Prescott	From 0.75 ACH to 0.35 ACH	565	481	84	$747	$747	$173	23%	$431	$315	$345	$0	$74	4.7	2.3	100%	50%	1.73
Weighted Average					84	$747	$747	$173	23%	$431	$315	$345	$0	$74	4.7	2.3	100%	50%	1.73

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life from UNSG TRM 2007-1
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See worksheet 'Cost Assumptions' for information of cost data.
(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009

Residential Gas Efficiency Program

UNSG RES PROGRAM

REDUCED DUCT LEAKAGE

PROGRAM DATA	
Measure Life (yrs):	20
Program Life (yrs):	5
Levelized $/Therms	$0.84
Ratio of Non-inc to Incentive Costs	50.0%
IRP Discount Rate:	7.00%
Social Discount Rate	7.00%
NTG Ratio:	100%

OPERATING DATA
262 cfm 25 to 105 cfm 25

RATE DATA	
$/Therm	$0.8819

OTHER FACTORS	
Application	RET
Cost Basis:	Installed Cost

Weighting Factors	
Flagstaff	40%
Kingman	50%
Prescott	10%

			DEMAND/ENERGY SAVINGS			INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS					WGT.	% Incent	TRC
Measure Type	Location	Basis	Base Usage (Therms/home)	Measure (Therms/home)	Annual Savgs. Per Home (Therms)	IRP PV Benefit ($/Unit)	Social PV Benefit ($/Unit)	Recommended Incentive ($/Unit)	Recommended Incentive % PV	PV Program Cost ($/Unit)	NPV ($/Unit)	Incr. Cost ($/Unit)	Tax Credits and Other Incentives ($/Unit)	Cost Savings ($/Unit)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
Reduced Duct Leakage	Prescott	262 cfm 25 to 105 cfm 25	565	438	127	$1,133	$1,133	$270	24%	$675	$458	$540	$0	$112	4.8	2.4	100%	50%	1.68
Weighted Average					127	$1,133	$1,133	$270	24%	$675	$458	$540	$0	$112	4.8	2.4	100%	50%	1.68

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life from UNSG TRM 2007-1
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See worksheet 'Cost Assumptions' for information of cost data.
(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009

Residential Gas Efficiency Program

Incentive Calculations

UNSG RES PROGRAM

AIR SEALING + ATTIC INSULATION

PROGRAM DATA				
Measure Life (yrs):				20
Program Life (yrs):				5
Avoided Costs	No Carbon	Lo Carbon	Med Carbon	Hi Carbon
Summer On-Peak AC $/k'	$0.087	$0.104	$0.111	$0.118
Summer Off-Peak AC $/k'	$0.053	$0.069	$0.076	$0.083
Winter On-Peak AC $/kW	$0.067	$0.083	$0.090	$0.098
Winter Off-Peak AC $/kWI	$0.059	$0.075	$0.082	$0.090
Levelized $/Therms	$0.842	$0.962	$1.014	$1.071
Ratio of Non-inc to Incentive Costs				50.0%
IRP Discount Rate:				7.00%
Social Discount Rate				7.00%
NTG Ratio:				100%

OPERATING DATA	
On-Pk Ratio:	68%
Off-Pk Ratio:	32%
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	96%

RATE DATA	
$/kWh	$0.08515
$/Therm	$0.88190

OTHER FACTORS	
Line Loss Factor - Deme	9.50%
Line Loss Factor - Ener	9.50%
Capacity Reserve Facto	0%
Application	RET
Cost Basis:	Installed Cost

DEMAND/ENERGY SAVINGS								INCENTIVE CALCULATIONS							CUSTOMER COST/SAVINGS					WGT.	% Incent	TRC	Societal		
Measure Type	Location	Basis	Base Usage Therms/home	Measure Therms/home	Annual Savgs. Per Home (kW)	Annual Savgs. Per Home (kWh)	Annual Savgs Per Home (Therms)	IRP PV Benefit ($/Unit)	Societa Lo PV Benefit ($/Unit)	Societal Med PV Benefit ($/Unit)	Societal Hi PV Benefit ($/Unit)	Recommended Incentive ($/Unit)	% PV	PV Program Cost ($/Unit)	NPV $/Unit	Incr. Cost ($/Unit)	Tax Credits and Other Incentives ($/Unit)	Cost Savings ($/Unit)	Payback wo/Inc. (yrs)	Payback w/Inc (yrs)	Weighting Factor	(%)	BC Ratio	Lo	Med	Hi
Attic Insulation & Air Sealir	Prescott	50 sf <R19 to >=R	574	551	0.85	1,030	107	$1,915	$2,266	$2,419	$2,587	$500	26%	$1,390	$526	$1,140	$0	$182	6.3	3.5	100%	44%	1.38	1.63	1.74	1.86
Weighted Average							107	$1,915	$2,266	$2,419	$2,587	$500	26%	$1,390	$526	$1,140	$0	$182	6.3	3.5	100%	44%	1.38	1.63	1.74	1.86

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life from UNSG TRM 2007-1
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See worksheet 'Cost Assumptions' for information of cost data.
(5) It is assumed that as installed inulation acts as R 11 (R-13 that has been de-rated).

Weighted Average Check							OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK